

## **REMARKS**

Claims 1-9 are pending in the present application. Claims 1-9 stand rejected under 35 USC § 102(b) and 102(e). Claim 10 has been newly added. Accordingly, after entry of the present amendment, the pending claims will be claims 1-10.

The Applicants appreciate the Examiner's thorough examination of the subject application and respectfully request reconsideration of the subject application based on the following remarks.

### 35 U.S.C. § 102(b) REJECTIONS

The Examiner has rejected claims 1-9 under 35 USC 102(b) as anticipated by U.S. Patent Number 6,292,135 to Takatori, et al. ("Takatori" of the "Takatori Reference") and, alternatively, as anticipated by U.S. Patent Application Publication Number 2003/0040281 to Nakao, et al. ("Nakao" or the "Nakao Reference"). The Applicants respectfully traverse the grounds for rejection based on the following remarks.

The present invention discloses adaptive antenna array systems and methods for controlling adaptive control of such systems by weighted coefficient calculation. Specifically, the system of the present invention provides a control unit to control the operation of the adaptive control by the weighting coefficient calculation unit corresponding to the results of the evaluation of the convergence status by the evaluation unit. More specifically, the control unit controls the operation of the adaptive control, based on a moving average square error  $E$ . As shown in FIGs. 3 and 4, when the moving average square error  $E$  falls below a certain threshold  $Th$ , the control unit can, for example, stop the operation of the adaptive control or activate the adaptive control intermittently, respectively. In this manner, the objects of reducing the number of calculations and obtaining a suitable weight coefficient are achieved. See, e.g., Specification, page 3, lines 6-7.

The Takatori reference discloses an adaptive antenna array system, of which, the Examiner asserts that, Takatori's "weight control" corresponds to the "control unit for controlling the operation of the adaptive control" of the invention as claimed. The Applicants respectfully disagree.

According to the present invention, the control unit controls the operation of the adaptive control of the array system. For example, when convergence is reached, the control unit stops further adaptive control operation or intermittently activates the adaptive control. Takatori's "weight control" does not control the operation of the adaptive control in the sense that the present invention does; rather, it determines the weights by the minimum mean square error means ("MMSE"). See, for example, Takatori, col. 4, lines 36-55. Thus, Takatori does not teach, mention or suggest a control unit for controlling the operation of the adaptive control by the weighting coefficient calculation unit corresponding to the results of the evaluation of the convergence status by the evaluation unit.

Accordingly, it is respectfully submitted that, the claims are not anticipated by Takatori, and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 102(b). Accordingly, the claims are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

Furthermore, referring to Nakao FIG. 3, the Nakao reference discloses adaptive antenna array processing. The Examiner asserts that, Nakao's "swap detecting unit" is the equivalent to the control unit of the present invention. The Applicants respectfully disagree.

Nakao is concerned with "swap" between adjacent base stations whereby  
users talking on the phone may be interchanged, or  
communication with a terminal connected with a particular base  
station may be interrupted by a radio wave from [an]other  
terminal.

Nakao, page 2, ¶ 0042. Moreover, according to the Nakao reference, the swap detecting unit:

detects a swap, based on a calculation error of the weight vector by the reference signal for a reception signal from one of the plurality of terminals, and an error detection result for a reception signal from another terminal among the plurality of terminals.

Nakao, page 3, 0061.

There is nothing to suggest, however, that the swap detecting unit controls the operation of the adaptive control by the weighting coefficient calculation unit corresponding to the results of the evaluation of the convergence status by the evaluation unit. The processes provide totally different results.

Accordingly, it is respectfully submitted that, the claims are not anticipated by Nakao, and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 102(b). Accordingly, the claims are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

### 35 U.S.C. § 102(e) REJECTIONS

The Examiner has rejected claims 1-9 under 35 USC 102(e) as anticipated by U.S. Patent Application Publication Number 2004/0088610 to Kobayakawa, et al. ("Kobayakawa" or the "Kobayakawa Reference"). The Applicants respectfully traverse the grounds for rejection based on the following remarks.

The Kobayakawa reference discloses an apparatus for processing signals that includes an error function generating unit 3, an adaptive weight update unit 4, and a correction unit 11. Specifically, a correction factor generating unit 11 generates correction factors, which are multiplied by a reference signal  $r(n)$  and the sum  $Y(n)$ . The corrected sum  $Y(n)$  is subtracted from signal  $r(n)$  to provide an error function  $e(n)$ . The error function  $e(n)$  and the branch signals  $X1(n)$  to  $Xm(n)$  generate the next adaptive weights  $W1(n+1)$  to  $Wm(n+1)$ . See, Kobayakawa, page 4, ¶ 0071. Moreover, the Kobayakawa method uses the error function generating unit 3 to prevent "the

adaptive weight from converging into zero and diverging." Id., page 2, ¶ 0022. More specifically, Kobayakawa teaches using a set of correction factors  $\alpha(n)$  and  $\beta(n)$  to regulate the error function  $e(n)$ .

Kobayakawa does not teach, mention or suggest a control unit for controlling the operation of the adaptive control by the weighting coefficient calculation unit corresponding to the results of the evaluation of the convergence status by the evaluation unit. Accordingly, it is respectfully submitted that, the claims are not anticipated by Kobayakawa, and further, satisfy all of the requirements of 35 U.S.C. 100, et seq., especially § 102(e). Accordingly, the claims are allowable. Moreover, it is respectfully submitted that the subject application is in condition for allowance. Early and favorable action is requested.

If for any reason a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge or credit Deposit Account No. **04-1105**.

Respectfully submitted,

Date: October 12, 2004

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